University of Technology, Sydney

Doctoral Thesis

Essays in Market Microstructure and Investor Trading

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Declaration of Authorship

I, Danny Lo, certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text. I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

Signed:

Date:

Abstract

This dissertation consists of three self-contained essays examining issues pertaining to market microstructure and investor trading. The first essay contributes to our understanding of the liquidity replenishment process in limit order book markets. A measure of resiliency is proposed and quantified for different liquidity shocks through the impulse response functions generated from a high frequency vector autoregression. The model reveals a rich set of liquidity dynamics. Liquidity shocks were found to have immediate detrimental effects on other dimensions of liquidity but the replenishment process generally occurs quickly, indicating limit order books are resilient. Cross-sectionally, resiliency is found to be consistently high across all large stocks, consistent with competition for liquidity provision coming from computerised algorithms. For other stocks, greater variation in resiliency is observed, indicating more selective participation by these liquidity providers.

The second essay is motivated by concerns raised from the investment community on the impact of algorithmic trading among investors. A strong dichotomy exists between retail and non-retail investors, with non-retail investors predominantly having access to algorithmic trading technology. We compare the limit order behaviour and execution costs of retail and non-retail investors to provide insights into the extent to which technology benefits investors. Fundamental differences are found in the trading behaviours of the two groups, consistent with their inequalities in access to trading technology. We also find evidence consistent with some non-retail investors imposing adverse selection costs on the limit orders of retail investors, but our results fall short of supporting the view that algorithmic trading technology is severely disadvantaging retail investors.

The third essay examines information-based trading by institutional and retail investors around earnings announcements. Prior to the announcement, limited and weak evidence is found of earnings anticipation, which is isolated to full-service retail investors. In contrast, strong trading patterns are observed for institutional

and retail investors in response to earnings announcements, with the latter having the potential to drive the post-earnings announcement drift effect. We find that retail investor trades during the earnings announcement periods underperform their trades in non-announcement periods. This is driven mostly by the trading of discount retail investors, with top-tier institutional investors the likely beneficiaries, and cannot be attributed to the adverse selection of stale limit orders. Overall, our findings are consistent with investors having different information processing abilities. Contrary to the belief that earnings disclosures level the playing field, the release of earnings news exacerbates information asymmetries between the most and least skilled information processors.

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Lastly, I would like to dedicate this thesis to my father, whose memory is a constant source of inspiration. To my daughter, Alicia Lo who brightens me every day, I hope this study can be a future source of inspiration.

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